[Figure 13] Figure 13 shows cell number of HIV-specific IFN-γ secreting spleen cells isolated from the mice immunized with Ad5/35-LacZ, Ad5/35-HIV clade C /env/gag of this invention and from the mice with no-immunization.

CLAIMS

1. A chimera adenovirus type 5/type 11 or type 35 vector which comprises a replication-defective adenovirus type 5 and a gene coding for a human immunodeficiency virus (HIV) envelope protein or for a mutant thereof equivalent in function thereto as integrated in said adenovirus type 5 in a manner capable of expression, with the fiber protein-encoding gene of said adenovirus type 5 being substituted by a gene coding for the fiber protein of an adenovirus type 11 or type 35 or for a mutant thereof equivalent in function thereto in a manner capable of expression.

2. The chimera adenovirus type 5/type 11 or type 35 vector according to Claim 1, with a gene coding for a HIV clade B or HIV claid C envelope protein or for a mutant thereof equivalent in function thereto as integrated in a manner capable of expression.

3. The chimera adenovirus type 5/type 11 or type 35 vector according to Claim 1 or 2 which further comprises an HIV gag gene or a mutant gene thereof equivalent in function thereto as integrated therein in a manner capable of expression, together with said gene coding for HIV envelope protein or mutant thereof equivalent in function thereto.

4. The chimera adenovirus type 5/type 11 or type 35 vector according to any of Claims 1 to 3, with the fiber protein-encoding gene of said adenovirus type 5 being substituted by a gene coding for the fiber protein of an adenovirus type 35 or for a mutant thereof equivalent in function thereto in a manner capable of expression.

5. The chimera adenovirus type 5/type 11 or type 35 vector according to any of Claims 1 to 4, wherein the replication-defective adenovirus type 5 is an E1-deficient,

replication-defective adenovirus type 5 or an E1 and E3-deficient replication-defect adenovirus type 5.

6. A pharmaceutical composition which comprises, as an active ingredient, the chimera adenovirus type 5/type 11 or type 35 vector according to any of claims 1 to 5.

7. The pharmaceutical composition according to Claim 6 which is to be used for the protection against HIV infection.

8. The pharmaceutical composition according to Claims 6 or 7 which is an HIV vaccine.

9. The pharmaceutical composition according to any of Claims 6 to 8 which is to be used in combination with a replication-defective virus vector or nonvirus vector comprising a gene coding for an HIV envelope protein or for a mutant thereof equivalent in function thereto as integrated therein in a manner capable of expression.

10. The pharmaceutical composition according to any of Claims 6 to 8 which is to be used in combination with an anti-HIV agent.

11. The pharmaceutical composition according to Claim 10, wherein the anti-HIV agent comprises at least one species selected from among reverse transcriptase inhibitors and protease inhibitors.

12. A method for the protection against HIV infection or vaccination against HIV which comprises administration of the chimera adenovirus type5/ type11 or type 35 vector according to any of Claims 1 to 5 and a replication-defective virus vector or nonvirus vector comprising a gene coding for an HIV envelope protein or for a mutant thereof equivalent in function thereto as integrated therein in a manner capable of expression.

13. A method for the protection against HIV infection or vaccination against HIV which comprises administration of the chimera adenovirus type 5/type 11 or type 35 vector according to any of Claims 1 to 5 and an anti-HIV agent.